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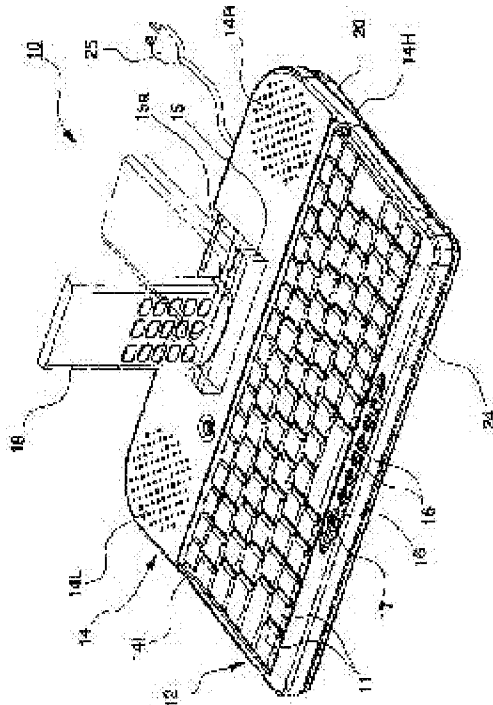
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(54) KEYBOARD DEVICE FOR PORTABLE ELECTRONIC EQUIPMENT AND CHARGING EQUIPMENT



(57)Abstract:

PROBLEM TO BE SOLVED: To provide a keyboard device for portable electronic equipment capable of inputting characters without shortening battery duration time of portable electronic equipment and also being operated while charging connected portable electronic equipment.

SOLUTION: In this keyboard device 10 for portable electronic equipment, a keyboard main body 12 on which a plurality of key switches 11 are installed on the upper face, a connecting means for connecting the keyboard main body 12 to the portable electronic equipment 18, and a power source for driving and/or charging the portable electronic equipment 18 are provided integrally in a housing.

[0001]

[Field of the Invention]This invention relates to the keyboard device and charging equipment for portable electronic apparatus.

[0002]

[Description of the Prior Art]In recent years, portable electronic apparatus, such as a Personal Digital Assistant and a portable telephone, have been having advanced features with the spread.

The thing provided with the electronic mail function or the Internet connectivity function is increasing.

Therefore, also in these small portable electronic apparatus, a character input is performed increasingly frequently.

[0003]In order to perform a character input with these portable electronic apparatus simple substances, The handwritten input by the stylus pen on the method of inputting a character combining the button of a portable telephone, and the display screen provided with the touchpad, Or the thing using the keyboard displayed on the display screen is most, and the character input was able to be comfortably performed by neither of the methods.

[0004]In order to solve this, the keyboard device connectable with this Personal Digital Assistant is provided now. This keyboard device installs the guide part for connecting a Personal Digital Assistant to the keyboard body provided with two or more key switches. There are some which can fold up a keyboard body now. If such a keyboard device is connected, a character input can be performed now almost on a par with the electronic equipment provided with keyboards, such as a personal computer, in respect of the character input, and the user-friendliness of a Personal Digital Assistant can be raised greatly.

[0005]

[Problem(s) to be Solved by the Invention]However, in the above-mentioned keyboard device provided now, since the power supply for driving a keyboard device had structure depending on the power supply of a Personal Digital Assistant, big load was applied to the power supply by the side of a Personal Digital Assistant, and there was a problem that driving time became short. Although a rechargeable battery is usually charged and used in a Personal Digital Assistant, Where the aforementioned keyboard device is connected, since a power supply terminal will be connected to a keyboard device, while using the keyboard device, it could not charge, but there was also a problem that a keyboard device could not be used during charge conversely.

[0006]The foldable keyboard device is also provided these days. Although it is convenient for carrying of this keyboard device, to perform a character input using this keyboard device, it is necessary to hold plane, where a keyboard is opened. However, since the mechanism for holding this plane shape was not enough, the keyboard device bends or bent easily, and became unstable, and this foldaway keyboard device had it practical, when it placed good [a knee], for example. [dissatisfied]

[0007]This invention is made into one thing of the purpose for which the keyboard device [a character input is possible, without being made in order to solve the above-mentioned technical problem, and shortening the cell temporal duration of a portable electronic apparatus, and] for portable electronic apparatus which can be operated charging the connected portable electronic apparatus is provided. This invention is made into one

thing of the purpose for which the charging equipment for portable electronic apparatus provided with the input means which can operate it is provided, charging a portable electronic apparatus.

[0008]

[Means for Solving the Problem]In order to attain the above-mentioned purpose, this invention adopted the following composition.

[0009]A keyboard body in which a key switch of plurality [keyboard device / of this invention / for portable electronic apparatus / upper surface] was installed, A case was equipped with a connecting means for connecting this keyboard body and a portable electronic apparatus, and a power supply for driving and/or charging said portable electronic apparatus at one.

[0010]In this invention, a portable electronic apparatus shows small electronic equipment for using a Personal Digital Assistant, a portable telephone, etc., carrying. Since a keyboard device of this invention is considered as composition which equipped one with a keyboard body which is a means to assist a character input in these portable electronic apparatus, a connecting means with said portable electronic apparatus, and a power supply at one case, If a portable electronic apparatus is connected to this keyboard device, a comfortable character input to a portable electronic apparatus by a keyboard body will become possible.

[0011]A keyboard device of this invention is having a power supply, and if a character input is made possible and it has further composition which equipped this power supply with a charging function, without being dependent on a power supply of a portable electronic apparatus, it is also possible to operate a portable electronic apparatus, charging. Therefore, according to the keyboard device of this invention, it is possible to solve the above conventional problems and to raise the operativity of a portable electronic apparatus greatly.

[0012]A keyboard device of this invention may be provided with an interface for connecting with electronic equipment of the exteriors, such as a personal computer. If it has such composition, data with external electronic equipment can be exchanged via this keyboard device. And since connection with external electronic equipment is simultaneously establishable only by a user connecting a portable electronic apparatus to this keyboard device if it changes into the state where a keyboard device of this invention was connected to external electronic equipment, data is promptly exchangeable.

[0013]Next, a keyboard device for portable electronic apparatus of this invention, A connecting means for connecting to the upper surface a keyboard body in which two or more key switches were installed, this keyboard body, and a portable electronic apparatus, and a terminal area for connecting said portable electronic apparatus to a power supply for driving and/or charging were established in a case in one.

[0014]Next, in a keyboard device of this invention, said power supply can have composition used as a rechargeable battery. If it has such composition, since a keyboard device can also be used without using an external power supply, it can raise the portability of a keyboard device with a portable electronic apparatus.

[0015]Next, in a keyboard device for portable electronic apparatus of this invention, connection with an external power supply of said power supply may be enabled. Also when it has such composition, a keyboard device can be operated without being dependent on a power supply of the above-mentioned portable electronic apparatus. A

portable electronic apparatus can be operated charging a portable electronic apparatus using this power supply. Since this composition can perform charge to this rechargeable battery if a keyboard device is equipped with a rechargeable battery, in using an external power supply in an available environment, A keyboard can perform a character input to a portable electronic apparatus, connecting this keyboard device to a power supply, and charging both a portable electronic apparatus and a keyboard device.

[0016]Next, in a keyboard device for portable electronic apparatus of this invention, said connecting means is equipped with a cradle part for holding said portable electronic apparatus, and said cradle part can also have composition whose tilting was enabled to said case.

[0017]Namely, where a portable electronic apparatus is connected to a cradle part provided in a keyboard device in this composition, Since this cradle part can be made to incline to a case now, if are provided by cradle part and it is, for example in the back side of a keyboard body, a portable electronic apparatus can be raised to the back side of a keyboard body, and it can arrange, and that angle of gradient can be adjusted free. Since an angle of an indicator of a portable electronic apparatus can be adjusted according to a user's look if this regulation function is used, a character input to a portable electronic apparatus can be made more comfortable, and operativity can be raised greatly.

[0018]Next, in a keyboard device for portable electronic apparatus of this invention, it is good also as composition which equipped a terminal area of said cradle part and said case with a ratchet mechanism. Since a cradle part is fixable in the state where arbitrary positions were made to incline while being able to make a cradle part tilt to said case with simple composition if it has such composition, a keyboard device excellent in operativity can be obtained easily and cheaply.

[0019]Next, in a keyboard device for portable electronic apparatus of this invention, it can have composition for which a connection connector for electrically connecting said portable electronic apparatus and the keyboard device concerned to said connecting means was prepared. By connecting the connection connector concerned with a connector for external connection with which a portable electronic apparatus is equipped, if it has such composition. While being able to perform communication between a portable electronic apparatus and this keyboard device, electric power for passing the connection connector concerned, and driving and/or charging a portable electronic apparatus can be supplied to a portable electronic apparatus.

[0020]Next, in a keyboard device for portable electronic apparatus of this invention, it can also have composition for which a wireless communication means for carrying out communication with said portable electronic apparatus and the keyboard device concerned to said connecting means was prepared. Since connection between a portable electronic apparatus and a keyboard device is establishable by said wireless communication means by having such composition, Even if it does not connect a portable electronic apparatus and a keyboard device via a connector or a cable, a character input to a portable electronic apparatus, etc. can be operated using a keyboard device.

[0021]A wireless communication means in this invention shows a means of communication which can transmit and receive information among two or more electronic equipment using infrared rays, an electric wave, etc. Especially as this wireless communication means, although not limited, a communication method using IrDA (Infrared Data Association) which communicates with infrared rays, a communication

method using radio radio, etc. can be held, for example.

[0022]Next, in a keyboard device for portable electronic apparatus of this invention, it can have composition by which said case was equipped with at least one or more loudspeakers. When it had such composition and a portable electronic apparatus provided with a function which plays a sound and music is used, it is possible to play this sound and music by a high-quality sound loudspeaker. A user loses his troublesomeness equipped with headphone or an earphone, and can operate a character input to a portable electronic apparatus, etc. comfortably. A position in particular that provides this loudspeaker may not be limited, but may be installed in what kind of position of a case.

[0023]Next, in a keyboard device for portable electronic apparatus of this invention, said loudspeaker can also have composition whose tilting was enabled to said keyboard body or a case. If it has such composition, flexibility of arrangement of a loudspeaker can raise user-friendliness of increase and a keyboard device more.

[0024]Next, in a keyboard device for portable electronic apparatus of this invention, it can also have composition for which a protective cover connected to said case enabling free opening and closing was prepared.

[0025]Since a keyboard body, a loudspeaker, a terminal area, etc. with which a case was equipped with a protective cover provided by having such composition enabling said free opening and closing can be taken care of, a more suitable keyboard device for a cellular phone can be provided.

[0026]Next, in a keyboard device for portable electronic apparatus of this invention, It has a connecting plate connected to a base end of said protective cover enabling free rotation, this connecting plate is connected to said case, enabling free rotation, and said connecting plate can also have composition arranged in a one side face of said case in the state where said protective cover was closed.

[0027]That is, said connecting plate has length almost equivalent to thickness of a case, and is connected at the one-side end by the side of the undersurface back of a case. And it is connected to this connecting plate and the protective cover can cover now the upper surface side of said case. Therefore, in this composition, a protective cover and a connecting plate are made rotatable free to a case. Since this protective cover can be moved to the undersurface side of a case when opening a protective cover of such a structure, this protective cover does not become obstructive at the time of use of a keyboard device, and it can be considered as a user-friendly keyboard device.

[0028]Next, in a keyboard device for portable electronic apparatus of this invention, In the state where said protective cover was opened, this protective cover is arranged at the undersurface side of said case, said case is supported by said connecting plate, and these at least some cases can also have composition arranged by inclining to said protective cover.

[0029]That is, in a keyboard device of this composition, where a protective cover is opened, this protective cover is arranged at the undersurface side of a case. And a case connected to this connecting plate is estranged from a protective cover by changing into the state where a connecting plate stood up from a base end of this protective cover to the upper part. Said protective cover is arranged to the undersurface side of a case, and it can avoid becoming the obstacle at the time of use by having such composition. If it fixes in the state where a keyboard body with which a case was equipped was made to incline to a protective cover, a character input can be performed more comfortably. By or a thing

which will be made to incline by said connecting plate in support of a portion in which this loudspeaker is provided if a case is equipped with a loudspeaker and tilting of this loudspeaker is enabled to a keyboard body. A keyboard body can also be changed into the state where have arranged in parallel with a protective cover, and made only a loudspeaker incline and it has arranged.

[0030]That is, according to this composition, a keyboard body can also be made to incline to a protective cover, and it can also arrange in parallel. Therefore, the user can choose arrangement of a keyboard body which is easier to use, and can be taken as a more user-friendly keyboard device.

[0031]Next, in a keyboard device for portable electronic apparatus of this invention, by a turned part of the center section, said protective cover is formed so that a cuff is possible, and one side of a protective cover parallel to this turned part can also have composition connected to a near side of said case enabling free opening and closing.

[0032]Since a protective cover which was used as this 2 chip box and has been arranged at a case near side will become available as a palm rest if a protective cover is turned up by said turned part and it arranges to a near side of a case in this composition while opening said protective cover, The user can perform a character input which uses a keyboard more comfortably.

[0033]Next, in a keyboard device for portable electronic apparatus of this invention, said keyboard body is stored by said case, enabling free in-and-out, and it can also have composition by which the upper surface side of this case was equipped with said connecting means.

[0034]Namely, a keyboard device of this composition connects a portable electronic apparatus to a connecting means provided in the case upper surface, and it is used for it as a state which pulled out a keyboard body from a case. In this composition, when a keyboard body is stored by case, a keyboard body can be protected at the time of carrying. Since said connecting means is provided in the upper surface of a case, as compared with a case where this connecting means is provided in the back [of a keyboard body], and side side, a size of a plane direction of a keyboard device can be made small, and if portability is raised, it can **. The case upper surface may be equipped with a loudspeaker with said connecting means, and it is good also as tilting being free to a case in this loudspeaker.

[0035]Next, in a keyboard device for portable electronic apparatus of this invention, it can have composition by which said keyboard body was equipped with a secondary memory means which can exchange a portable electronic apparatus and data.

[0036]Also when data saved at a portable electronic apparatus is lost or damaged since it can use as backup of data of a portable electronic apparatus, and other memory measures if it has such composition, data can be restored safely. Application etc. are memorized for this secondary memory means, and if it transmits to a portable electronic apparatus if needed and is made to use, a storage capacity to which a portable electronic apparatus was restricted is effectively utilizable. When a keyboard device is equipped with a loudspeaker, even if it does not connect a portable electronic apparatus by adding a function which outputs from a loudspeaker music which this secondary memory means was made to memorize, a sound, etc., it can make it possible for a keyboard device simple substance to perform music reproduction.

[0037]Although any information storage devices can apply nonvolatile memory, a hard

disk, etc. as a secondary memory means of a keyboard device of this composition, it is preferred to use nonvolatile memory from a field of a weight saving of a keyboard device and a miniaturization.

[0038]Next, in a keyboard device for portable electronic apparatus of this invention, it is good also as composition by which said case was equipped with a voice input means. When it had such composition, for example a portable telephone is connected to a keyboard device of this composition, conversation (handsfree conversation) by a telephone is attained operating a keyboard device. Even when using voice note (voice memo) functions, such as a Personal Digital Assistant, it becomes possible to input a voice note, operating a keyboard. Therefore, according to this composition, it is possible to raise user-friendliness of a portable electronic apparatus more.

[0039]Next, in the state where said portable electronic apparatus was connected with a connecting means for charging equipment for portable electronic apparatus of this invention to electrically connect a portable electronic apparatus, and a power supply for driving and/or charging said portable electronic apparatus, An input means for operating this portable electronic apparatus was provided in a case at one.

[0040]An input means in charging equipment for portable electronic apparatus of this invention refers to an input means to portable electronic apparatus, such as a keyboard device, a device for inputting coordinates, and a speech input system. A portable electronic apparatus by said input means can be operated performing charge to a portable electronic apparatus by having adopted the above-mentioned composition.

[0041]

[Embodiment of the Invention]Hereafter, although an embodiment of the invention is described with reference to drawings, this invention is not limited to following embodiments.

[0042](A 1st embodiment) Drawing 1 is a strabism lineblock diagram showing typically the keyboard device which is a 1st embodiment of this invention, and drawing 2 is a perspective view showing the state where the protective cover with which the keyboard device shown in drawing 1 was equipped was closed.

[0043]The monotonous type keyboard body 12 in which two or more key switches 11 were arranged as the keyboard device 10 was shown in drawing 1, It is considered as one and a case is accomplished, and the monotonous type loudspeaker part 14 connected to the back side of this keyboard body 12 equips with the cradle part (connecting means) 15 the near side of the crevice 15a formed in the center section of the loudspeaker part 14, and is constituted. The both-ends near side of the back side both ends of the keyboard body 12 and the loudspeaker part 14 is mutually connected via the hinge regions 14H and 14H, and tilting of the loudspeaker part 14 is enabled to the keyboard body 11. And in the keyboard device 10 shown in drawing 1, while Personal Digital Assistant 18 is supported by the tip part of the cradle part 15 via the connection connector (not shown) provided in the tip part of the cradle part 15, it is electrically connected with the keyboard device 10.

[0044]As shown in drawing 2, the keyboard device 10 of this embodiment, It has the protective cover (lid member) 20 made into the wrap size in the keyboard body 12 and the upper surface of the loudspeaker part 14, At the one-side end by the side of the base end of this protective cover 20 (back side), the hinge region 22a, It has the width which is equivalent to the thickness of the loudspeaker part 14 via 22a, the connecting plate 22 a little shorter than the loudspeaker part 14 is connected, enabling free rotation, and the

one-side end of the protective cover 20 of this connecting plate 22 and an opposite hand is connected to the back side lower side end of the loudspeaker part 14 via the hinge regions 22b and 22b, enabling free rotation. That is, rotation of the protective cover 20 and the connecting plate 22 is enabled to the loudspeaker part 14. Therefore, at the time of disuse, as shown in drawing 2, the keyboard device 10 of this embodiment carries out method arrangement of a wrap of the keyboard body 12 side and the upper surface side of the loudspeaker part 14 for this protective cover 20, and protects the keyboard body 12 and the loudspeaker part 14. In the state where this protective cover 20 was closed, **The various connectors which are arranged along the back side side of the loudspeaker part 14, and are formed in the back side of the loudspeaker part 14 by this are made into the structure covered only with closing the protective cover 20 by the connecting plate 22, and the connecting plate 22 has structure which connectors cannot damage easily.**

[0045]Next, the case where it changes into the state where said protective cover 20 was opened is explained with reference to drawing 1 and drawing 3. Drawing 3 A is a side view of the keyboard device 10 in which the state where the protective cover 20 was closed is shown, and partial side view and drawing 3 C which shows the state where drawing 3 B is rotating the protective cover 20 is a side view showing the state where opened the protective cover 20 and it has arranged to the undersurface side of the keyboard body 12.

[0046]In order to change into the state where the protective cover 20 was opened, the protective cover 20 is rotated up via the hinge region 22a, and it is made to shift to the state which shows in drawing 3 B. Next, rotate the protective cover 20 and the connecting plate 22, and it is made to move to the undersurface side of the keyboard body 12, as shown in drawing 3 B, and is made to shift to the state which shows in drawing 3 C. In the state which shows in drawing 3 C, it is fixed in the position the tip part of the protective cover 20 and whose tip part of the undersurface near side of the keyboard body 12 correspond mostly. If the protective cover 20 is moved to this position, the connecting plate 22 connected to the base end of the protective cover 20 as shown in drawing 3 C will be arranged between the base end of the protective cover 20, and the tip part by the side of the undersurface back of the loudspeaker part 14. As shown in drawing 3 C in this state, while the protective cover 20 is arranged at the undersurface side of the keyboard body 12 and the loudspeaker part 14 inclines to the keyboard body 12 by making the loudspeaker part 14 incline, It becomes the arrangement which was estranged by said connecting plate 22 from the base end of the protective cover 20, and was supported.

[0047]In the state where the protective cover 20 was opened, by considering each part of the keyboard device 10 as such arrangement. The loudspeaker part 14 will be in the state where it turned to the user side a little, and will be in the state where Personal Digital Assistant 18 connected to the cradle part 15 of the center section also turned to the mist and user side when the cradle part 15 was not started. And Personal Digital Assistant 18 and its indicator can be arranged by adjusting the angle of gradient of the cradle part 15 if needed in the position which a user tends to operate.

[0048]Although drawing 1 and drawing 3 showed the case where the loudspeaker part 14 was made to incline to the keyboard body 12, it is also possible to use it, without making the loudspeaker part 14 incline. That is, where it moved the protective cover 20 to the undersurface side of the keyboard device 10 and the tip part and tip part of the back near

side of the keyboard body 12 are coincided mostly, having arranged the loudspeaker part 14 and the keyboard body 12 to Masanao, it fixes. If it is considered as this arrangement, the keyboard body 12 and back side of the loudspeaker part 14 will be in the state where it was estranged by the connecting plate 22 from the surface side of the protective cover 20. Namely, it will be in the state where the key switch 11 upper surface of the keyboard body 12 inclined to the protective cover 20. Since either such arrangement or arrangement which made the above-mentioned loudspeaker part 14 incline can arrange the keyboard device 10 of this embodiment by adjusting the angle of gradient of the cradle part 15 in the position for which a user tends to use Personal Digital Assistant 18, it can acquire the outstanding operativity.

[0049]Let the keyboard body 12 be a full-sized keyboard with the keyboard device 10 shown in drawing 1. And two or more manual operation buttons 16 and the microphone (voice input means) 17 are formed in the upper surface near-side center section of the portion in which the key switch 11 was arranged. Let these manual operation buttons 16 be the manual operation buttons for operating the music reproduction function with which Personal Digital Assistant 18 was equipped with the keyboard device 10 of this embodiment. The microphone 17 is formed in order to use the function which needs voice input, such as a voice note function of Personal Digital Assistant 18.

[0050]The above-mentioned manual operation button 16 can also be formed in order to provide not only operation of the music reproduction function of Personal Digital Assistant 18 but other functions. For example, the case where the keyboard device 10 is equipped with the printer function for printing the output from Personal Digital Assistant 18 although not limited in particular, When Personal Digital Assistant 18 is equipped with the camera, this manual operation button 16 can be assigned to operation of these functions. Whether it uses in order to be able to operate any function of Personal Digital Assistant 18 and the keyboard device 10 and to operate which function should just choose this manual operation button 16 according to that use and scene operated. The arrangement in particular of the keyboard which can be used for the keyboard device 10 of this invention is not limited, but can use the thing of any arrangement. What is necessary is just to choose the pitch of the key switch 11, and a stroke suitably according to the size of the keyboard device 10.

[0051]The circular loudspeakers 14L and 14R are formed in the upper surface both sides of the loudspeaker part 14, respectively, and stereophonic reproduction of music or a sound is made possible in the keyboard device 10 of this embodiment. When said cradle part 15 is equipped with a portable telephone by having such composition, handsfree conversation can be held using the microphone 17 and the loudspeakers 14L and 14R.

[0052]The cradle part 15 for connecting a Personal Digital Assistant and a portable telephone is formed in the upper surface center part of the loudspeaker part 14, and tilting of this cradle part 15 is enabled to the loudspeaker part 14. It enables it to adjust the cradle part 15 free in an angle of gradient by a ratchet mechanism in the keyboard device 10 of this embodiment. As drawing 4 is a strabism lineblock diagram expanding and showing the portion of this cradle part 15 and it is shown in this figure, The axis of rotation 15a for making the cradle part 15 tilt to the both-side-surfaces bottom of the cradle part 15 to the loudspeaker part 15 is established, the geared part 15b was formed in the axis on the left-hand side of [graphic display] the cradle part 15, and the tip part of the flat spring 15c has geared to this geared part 15. 15 d of connection connectors for

electrically connecting Personal Digital Assistant 18 and the keyboard device 10 are provided in the graphic display upper surface side of the cradle part 15. And the cylindrical connecting member 19a is constructed over the lower part of the release button 19 provided in the left side of the cradle part 15, and the upper surface of the flat spring 15c.

[0053]In the usual state, the cradle part 15 turns that tip part to the back side of the loudspeaker part 14, and is energized, and the height of the upper surface of the cradle part 15 and the height of the upper surface of the loudspeaker part 14 are in agreement in this state. And at the time of use, the cradle part 15 is raised at arbitrary angles centering on the base end 15b of the cradle part 15. And in order to return the cradle part 15 which stood up to the original position, the depression of the release button 19 provided in the graphic display left-hand side of the cradle part 15 is carried out. As shown in drawing 4, the connecting member 19a of the release button 19 lower part is pushed by carrying out the depression of this release button 19. By this, the flat spring 15c is pressed by the connecting member 19a from the upper surface side, and bends, the geared part 15b and the tip part of the flat spring 15c which has occluded separate from the geared part 15b, immobilization of the cradle part 15 is canceled, and the cradle part 15 returns to the original position.

[0054]In the keyboard device 10 of this invention, it can also have composition energized by the state where the cradle part 15 stood up. In this case, at the time of disuse, in the crevice 15a, where the cradle part 15 is stored, it fixes, and it becomes the composition of raising the cradle part 15 by carrying out the depression of the above-mentioned release button 19 at the time of use.

[0055]Although considered as the structure which supports Personal Digital Assistant 18 by the connection connector provided in cradle part 15 tip part in the keyboard device 10 of this embodiment, the guide part doubled with the shape of Personal Digital Assistant 18 may be provided in the cradle part 15. That is, along with this guide part, Personal Digital Assistant 18 is fitted in from the tip side of the cradle part 15, and it may be made to connect Personal Digital Assistant 18 to the connection connector provided in the inner bottom of the cradle part 15. Since Personal Digital Assistant 18 will be supported by the guide part if it has such composition, excessive load can be prevented from starting a connection connector, and it can be considered as the structure which a connection connector cannot damage easily.

[0056]As shown in drawing 1, inside the keyboard body 12 (drawing 1 inside of the front right side), The rechargeable battery (power supply) 24 for driving the keyboard device 10 is built in, and the keyboard device 10 can be operated now, without being dependent on the power supply of the Personal Digital Assistant connected to the cradle part 15. And the keyboard device 10 of this embodiment can connect now to an external power supply the power cord 25 connected to the back side side of the loudspeaker part 14. in addition -- the power cord 25 provides a connector in a base end -- this connector -- a case field -- it is preferred that attachment and detachment for the terminal provided in urban areas are enabled. Load is not applied to the power supply by the side of Personal Digital Assistant 18 by driving the keyboard device 10 with the rechargeable battery 24 built in the keyboard body by such power supply composition, If it is connected with an external power supply using the power cord 25, the rechargeable battery 24 of the keyboard device 10 and the power supply (cell) of the portable information terminal 18

can be charged.

[0057]The keyboard device 10 of this embodiment of the above composition, While the keyboard body 12 can perform comfortably the character input to Personal Digital Assistant 18, By having made the cradle part 15 flexibly tiltable, it can arrange easily in the position which is easy to operate Personal Digital Assistant 18, Since it inclines and the keyboard body 12 or the loudspeaker part 14 can be arranged to the protective cover 20 arranged on the back side of the keyboard body 12 at the time of use, it is the thing provided with the more outstanding operativity.

[0058]In the keyboard device 10 of this embodiment. It has come to be also able to perform charge of Personal Digital Assistant 18 by building the rechargeable battery in the inside by being able to operate the keyboard device 10, without sharing the power supply of Personal Digital Assistant 18, and enabling an external power supply and connection. And by using combining these, while charging Personal Digital Assistant 18, Personal Digital Assistant 18 can be operated.

[0059]By using combining the microphone 17 and the loudspeakers 14L and 14R, when a portable telephone is connected, handsfree conversation, and the sound recording/playback of the voice memo to Personal Digital Assistant 18 can be performed. Since the upper surface near side of the keyboard body 12 is equipped with the manual operation button 16 for a music reproduction function, with this manual operation button 16, the music reproduction function of Personal Digital Assistant 18 is used, and it can output from the loudspeakers 14L and 14R. If the keyboard device 10 is provided with the memory measure of nonvolatile memory, a hard disk, etc. in which music and a sound were recorded, music and a sound can be played with keyboard device 10 simple substance with this manual operation button, and it can also output from the loudspeakers 14L and 14R.

[0060](A 2nd embodiment), next a 2nd embodiment of this invention are described in detail below with reference to drawings.

[0061]Drawing 5 A and drawing 5 B are the strabism lineblock diagrams of the keyboard device which is a 2nd embodiment of this invention, drawing 5 A shows the state where the keyboard body 32 was stored to case 33 inside, and drawing 5 B shows the state where the keyboard body 32 was pulled out from the case 33. The keyboard device 30 shown in these figures is stored from the near-side side inside the case 33, enabling free in-and-out of the keyboard body 32, The loudspeakers 34L and 34R are formed in the upper surface both sides of the case 33, respectively, the cradle part (connecting means) 35 is formed in the upper surface center part of the case 33, and outline composition is carried out. And Personal Digital Assistant 38 is inserted in the base end side of the cradle part 35 from the tip side of the cradle part 35, and the keyboard device 30 and Personal Digital Assistant 38 are electrically connected by the connection connector which is not illustrated.

[0062]Tilting of the cradle part 35 is enabled to the case 33 like the cradle part 15 shown in drawing 1, The cradle part 35 which can arrange now in the position which is easy to operate Personal Digital Assistant 38, and stood up returns to the original position by adjusting the angle of gradient by carrying out the depression of the release button 36 provided in the upper surface center part of the cradle part 35.

[0063]The loudspeakers 34L and 34R provided in the upper surface both sides of the case 33 can output now the music and the sound which were played with the Personal Digital

Assistant like the keyboard device 10 of a 1st embodiment of the above. If the keyboard device 30 is provided with the music reproduction function, it can listen to music also with keyboard device 30 simple substance. Although the case where the loudspeaker 34L and R were considered as the composition fixed to the case 33 upper surface was shown in drawing 5 A and B, these loudspeakers 34L and 34R can also be considered as the composition provided as tilting being free to the case 33. Since the angle of gradient of a loudspeaker can be adjusted free if it has such composition, the user can arrange a loudspeaker in the position which is easy to hear it, and can raise the user-friendliness of the keyboard device 40 more.

[0064]Although not illustrated, the keyboard device 40 of this embodiment contains the rechargeable battery in the inside, and an external power supply and connection of it are still enabled. therefore -- since the keyboard device 40 is driven with the built-in rechargeable battery, while it can work, without caring about the remaining electricity pond capacity of Personal Digital Assistant 39 and Personal Digital Assistant 38 is charged -- **** -- it can be operated now.

[0065]The keyboard body 32 is stored in the case 33 at the time of disuse, and the big feature of the keyboard device 30 of this embodiment has it in the point which uses for the keyboard body 32 pulling out if needed as shown in drawing 5 B. By having adopted this structure, rather than the keyboard device 10 shown in drawing 1, the size of the plane direction of a case can be small formed now, a paper occupancy space can be made small, and a desk top can be utilized effectively.

[0066]The keyboard device of this embodiment can be used even if it carries out a keyboard device not only a Personal Digital Assistant but for portable telephones. Drawing 6 is a strabism lineblock diagram showing the keyboard device 40 which enabled it to connect the portable telephone 39 to the keyboard device 30 of a 2nd embodiment of this invention, The point that this keyboard device 40 differs from the keyboard device 30 shown in drawing 5 A and B is only the shape of the cradle part 45 which is a terminal area with the portable telephone 39, and is provided with a function equivalent to the keyboard device 40 shown in drawing 5. Therefore, below, it supposes that this cradle part 45 is explained in detail, the same numerals are given to the same thing as the component shown in drawing 5 B among the components shown in drawing 6, and that detailed explanation is omitted.

[0067]The final controlling element 39a side of the foldaway portable telephone 39 connected to the final controlling element 39a equipped with the manual operation button etc. enabling free opening and closing of the indicator 39b equipped with the liquid crystal panel etc. fits into the cradle part 45 of the keyboard device 40 shown in drawing 6. Although not illustrated, it has the connection connector and the portable telephone 39 by which ON was seen and carried out to the cradle part 45, and the keyboard device 40 are electrically connected to the inner surface side of this cradle part 45.

[0068]Since the keyboard device 40 of this embodiment is considered as the composition used combining a foldaway portable telephone, It does not have the structure for making the cradle part 45 tilt, but it is considered as the arrangement which a user tends to use by adjusting the angle of gradient of the indicator 39b of the portable telephone 39.

[0069]A handsfree conversation according to the portable telephone 39 by using also with the keyboard device 40 of this embodiment of the above composition combining the loudspeakers 34L and 34R which a character input is comfortably possible and were

provided in the case 33 upper surface with the keyboard body 32, and a microphone is possible. This microphone may use a built-in thing for the keyboard device 50, and may use a built-in thing for the portable telephone 39.

[0070](A 3rd embodiment), next a 3rd embodiment of this invention are described in detail below with reference to drawings.

[0071]Drawing 7 A and drawing 7 B are the strabism lineblock diagrams of the keyboard device 50 which is a 3rd embodiment of this invention, drawing 7 A shows the state where the protective cover 60 with which the keyboard device 50 was equipped was closed, and drawing 7 B shows the state where said protective cover 60 was opened. The loudspeaker parts 54L and 54R by which the keyboard device 70 shown in these figures was formed in the back side both ends of the keyboard body 52 and this keyboard body 52, It has the protective cover 60 connected to the keyboard body 52 via the cradle part 55 provided in the back side center section of the keyboard body 52, and the hinge region 60a provided in the near-side side of the keyboard body 52, and is constituted.

[0072]The cradle part 55 provided in the back side center section of the keyboard body 52, As shown in drawing 7 A and B, Personal Digital Assistant 58 can be fitted now in an inside along with the shape, and it is not illustrated, but it has the connection connector for electrically connecting Personal Digital Assistant 58 and the keyboard device 50 to cradle part 55 inner bottom. And tilting of the cradle part 58 is enabled to the keyboard body 52 in the base end 56. Therefore, Personal Digital Assistant 58 connected via the cradle part 58 can be arranged now by adjusting the angle of gradient of the cradle part 58 in the position which a user tends to use.

[0073]The loudspeakers 54L and 54R provided in the both sides of the cradle part 55 by the side of the back of the keyboard body 52 can output now the music and the sound which were played with the Personal Digital Assistant like the keyboard device of a 1st and 2nd embodiment of the above. Although not illustrated, while the keyboard device 50 of this embodiment also contains a rechargeable battery in an inside, connection of an external power supply is enabled. Therefore, since the keyboard device 50 is driven with the built-in rechargeable battery, operation of it has become possible [charging Personal Digital Assistant 58] by being able to operate a character input etc. and using an external power supply, without caring about the remaining electricity pond capacity of Personal Digital Assistant 58.

[0074]The characteristic point of the keyboard device 50 of this embodiment is a point of which the cuff is made possible in the length direction by the turned part 60b which the protective cover 60 becomes from the hinge region provided in the center section. That is, if the protective cover 60 is opened as shown in drawing 7 B, the protective cover 60 will rotate to a near side, will move in the base end 60a, will be turned up by the turned part 60b of the center section of the protective cover 60 with it, and will be arranged at the near side of the keyboard body 52. In this state, the tip part of the protective cover 60 moves to the position which laps with the base end of the protective cover 60, and is arranged on the near-side side of the keyboard body 52. Thus, the protective cover 60 in the state where it was opened becomes usable as a palm rest. Therefore, since the keyboard device 50 of this embodiment can put a wrist on this palm rest and can perform a character input, it can operate Personal Digital Assistant 58 more comfortably.

[0075]The keyboard device of this embodiment as well as the keyboard device 40 of a 2nd embodiment of the above can be used as a keyboard device of cellular-phone

appointment. Drawing 8 is a strabism lineblock diagram showing the case where the portable telephone 59 is connected to the keyboard device of a 3rd embodiment of this invention, The point that the keyboard device 70 shown in this figure differs from the keyboard device 50 shown in drawing 7 A and B is only the shape of the cradle part 75 which is a terminal area with the portable telephone 59, and is provided with the function equivalent to the keyboard device 50 shown in drawing 7. Therefore, below, it supposes that this cradle part 75 is explained in detail, the same numerals are given to the same thing as the component shown in drawing 7 among the components shown in drawing 8, and that detailed explanation is omitted.

[0076]As shown in drawing 8, the foldaway portable telephone 59 connected to the final controlling element 59a equipped with the manual operation button etc. enabling free opening and closing of the indicator 59b equipped with the liquid crystal panel etc. can be connected now to the cradle part 75 of the keyboard device 70 of this embodiment. And although not illustrated, the inner bottom of the cradle part 75 is equipped with the connection connector, The pars basilaris ossis occipitalis and this connection connector of the final controlling element 59a of the portable telephone 59 are connected by the inner bottom of the cradle part 75, and the portable telephone 59 and the keyboard device 70 are electrically connected.

[0077]In the keyboard device 70 of this embodiment, since tilting of the cradle part 75 is enabled to the keyboard body 52 in that base end 74, the indicator 59b of the portable telephone 59 can be moved to a legible position by adjusting the angle of gradient of this cradle part 75. In a foldaway case, the angle of gradient of the indicator 59b may be adjusted by the portable telephone 59 side like the portable telephone 59 shown in drawing 8.

[0078]The loudspeakers 54L and 54R which a character input is comfortably possible and were provided in the back side upper surface of the keyboard body 52 by the keyboard body 52 also with the keyboard device 70 of this embodiment of the above composition, A handsfree conversation according to the portable telephone 59 by using combining a microphone is possible. This microphone may use a built-in thing for the keyboard device 70, and may use a built-in thing for the portable telephone 39.

[0079]

[Effect of the Invention]As mentioned above, as explained in detail, the keyboard device of this invention, The connecting means for connecting to the upper surface the keyboard body in which two or more key switches were installed, this keyboard body, and a portable electronic apparatus, Since the power supply for driving and/or charging said portable electronic apparatus had composition with which the case was equipped in one, if a portable electronic apparatus is connected to this keyboard device, the comfortable character input to the portable electronic apparatus by a keyboard body is possible.

[0080]Since the keyboard device of this invention is provided with the power supply, if the character input is made possible and it has further composition which equipped this power supply with the charging function, without being dependent on the power supply of a portable electronic apparatus, it is also possible to operate a portable electronic apparatus, charging. Therefore, according to the keyboard device of this invention, it is possible to solve the above conventional problems and to raise the operativity of a portable electronic apparatus greatly.

[0081]Next, in the state where said portable electronic apparatus was connected with the

connecting means for the charging equipment for portable electronic apparatus of this invention to electrically connect a portable electronic apparatus, and the power supply for driving and/or charging said portable electronic apparatus, The portable electronic apparatus by said input means can be operated performing charge to a portable electronic apparatus because the input means for operating this portable electronic apparatus used the case with the composition provided in one.

[Claim 1]A keyboard device for portable electronic apparatus, wherein a case is equipped with a connecting means for connecting to the upper surface a keyboard body in which two or more key switches were installed, this keyboard body, and a portable electronic apparatus, and a power supply for driving and/or charging said portable electronic apparatus in one.

[Claim 2]A connecting means for connecting to the upper surface a keyboard body in which two or more key switches were installed, this keyboard body, and a portable electronic apparatus, A keyboard device for portable electronic apparatus, wherein a terminal area for connecting said portable electronic apparatus to a power supply for driving and/or charging is established in a case in one.

[Claim 3]The keyboard device for portable electronic apparatus according to claim 1 or 2, wherein said power supply is used as a rechargeable battery.

[Claim 4]A keyboard device for portable electronic apparatus given in any 1 paragraph of claims 1-3, wherein connection with an external power supply of said power supply is enabled.

[Claim 5]A keyboard device for portable electronic apparatus given in any 1 paragraph of claims 1-4, wherein said connecting means is equipped with a cradle part for holding said portable electronic apparatus and tilting of said cradle part is enabled to said case.

[Claim 6]The keyboard device for portable electronic apparatus according to claim 5, wherein a terminal area of said cradle part and said case is equipped with a ratchet mechanism.

[Claim 7]A keyboard device for portable electronic apparatus given in any 1 paragraph of claims 1-6, wherein said connecting means is equipped with a connection connector for electrically connecting said portable electronic apparatus and the keyboard device concerned.

[Claim 8]A keyboard device for portable electronic apparatus given in any 1 paragraph of claims 1-7, wherein said connecting means is equipped with a wireless communication means for performing communication with said portable electronic apparatus and the keyboard device concerned.

[Claim 9]A keyboard device for portable electronic apparatus given in any 1 paragraph of claims 1-8, wherein said case is equipped with at least one or more loudspeakers.

[Claim 10]The keyboard device for portable electronic apparatus according to claim 9, wherein tilting of said loudspeaker is enabled to said keyboard body or a case.

[Claim 11]A keyboard device for portable electronic apparatus given in any 1 paragraph of claims 1-10, wherein it has a protective cover connected to said case enabling free opening and closing.

[Claim 12]In the state where had a connecting plate connected to a base end of said

protective cover enabling free rotation, this connecting plate was connected to said keyboard body, enabling free rotation, and said protective cover was closed, The keyboard device for portable electronic apparatus according to claim 11, wherein said connecting plate is arranged in a one side face of said case.

[Claim 13]The keyboard device for portable electronic apparatus according to claim 12, wherein this protective cover is arranged at the undersurface side of said case, said case is supported by said connecting plate in the state where said protective cover was opened, these at least some cases incline and it is arranged to said protective cover.

[Claim 14]The keyboard device for portable electronic apparatus according to claim 11, wherein a cuff of said protective cover is made possible by a turned part provided in the center section and the one-side end of a protective cover parallel to this turned part is connected to a near side of said case, enabling free rotation.

[Claim 15]A keyboard inputting device for portable electronic apparatus given in any 1 paragraph of claims 1-10, wherein said keyboard body is stored by said case, enabling free in-and-out and the upper surface side of this case is equipped with said connecting means.

[Claim 16]A keyboard device for portable electronic apparatus given in any 1 paragraph of claims 1-15, wherein said case is equipped with a secondary memory means which can exchange a portable electronic apparatus and data.

[Claim 17]A keyboard device for portable electronic apparatus given in any 1 paragraph of claims 1-16, wherein said case is equipped with a voice input means.

[Claim 18]Charging equipment for portable electronic apparatus, wherein a connecting means for electrically connecting a portable electronic apparatus, a power supply for driving and/or charging said portable electronic apparatus, and an input means for operating this portable electronic apparatus in the state where said portable electronic apparatus was connected are provided in one at a case.

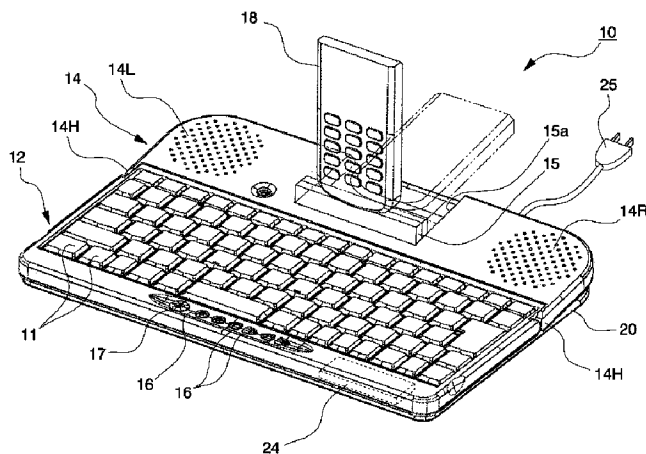


Fig 1

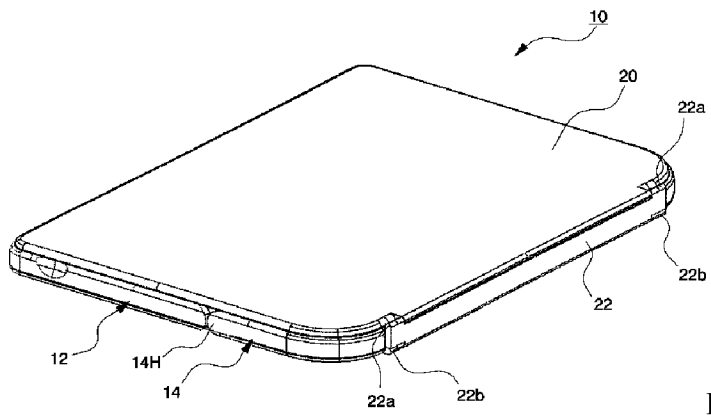


Fig 2

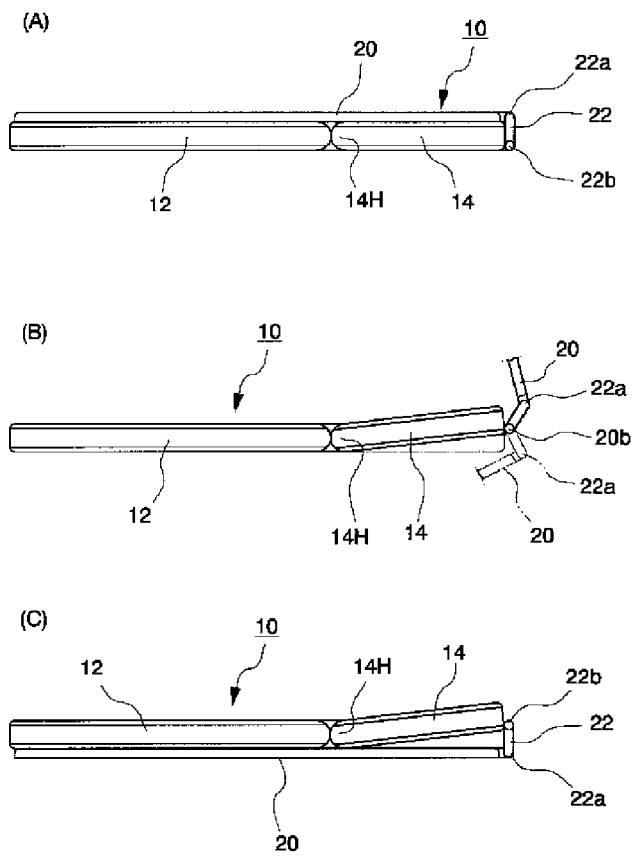


Fig 3

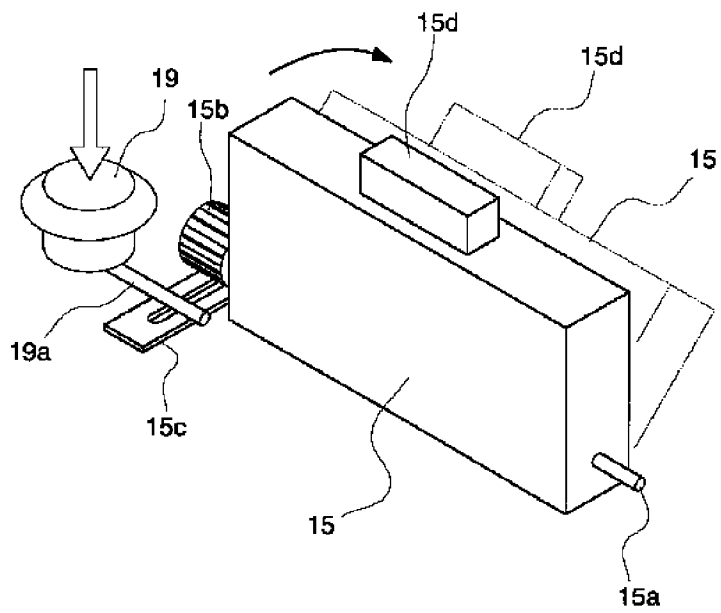


Fig 4

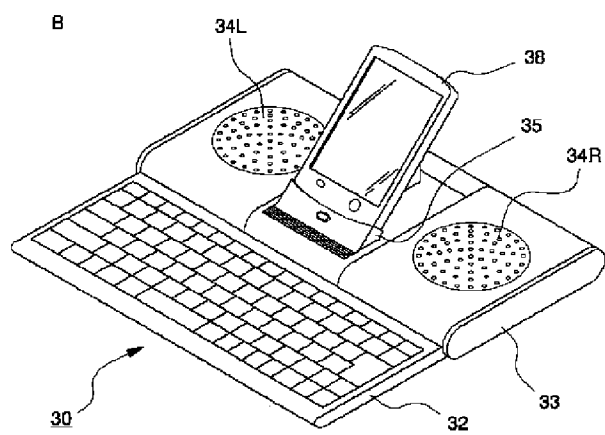
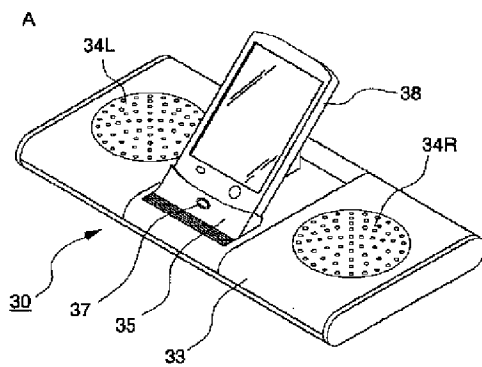


Fig 5

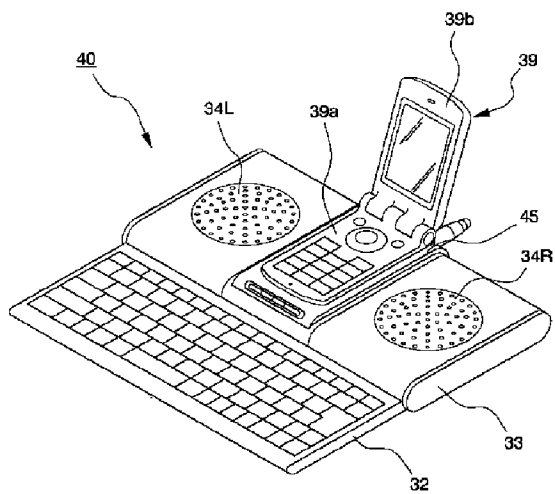


Fig 6

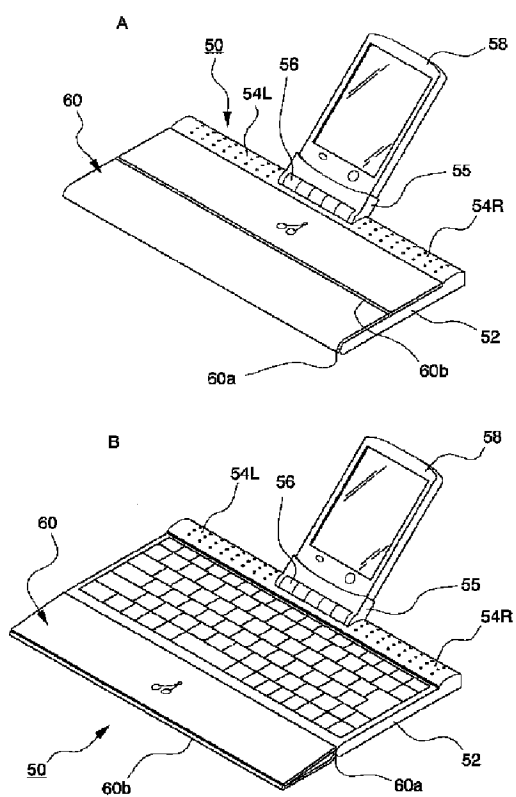


Fig 7

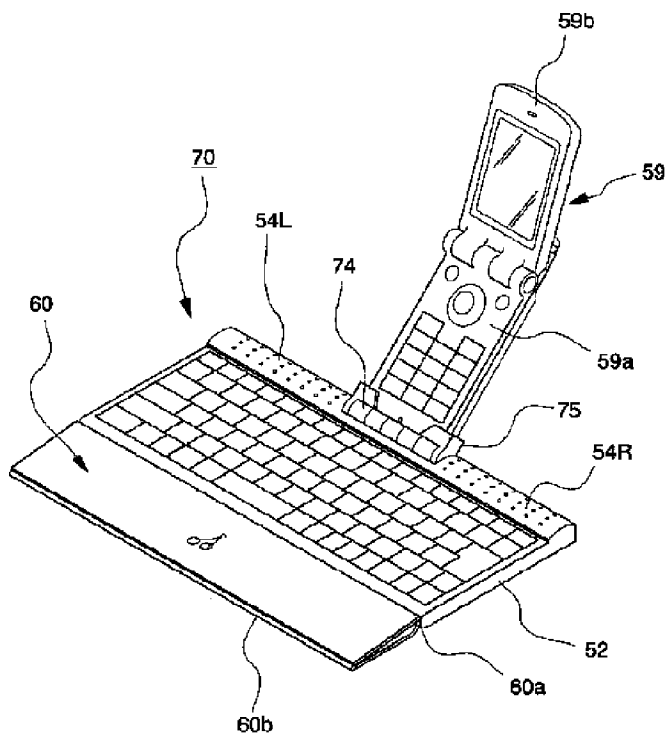


Fig 8